UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OPP OFFICIAL RECORD
HEALTH EFFECTS DIVISION
SCIENTIFIC DATA REVIEWS
EPA SERIES 361

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

MEMORANDUM

Date: November 2, 2005

Subject: Pyraclostrobin. Registration for Use on Strawberries. Supplemental Field Trial Data from California. Summary of Analytical Chemistry and Residue Data. Petition Number 4F6850.

DP Numbers:	D305177, D305178, D308576, D319564	Decision Nos.:	340031, 345975, 347914, 358952
PC Code:	099100	MRID Nos.:	46330001 and 46588101
40 CFR:	180.582	Chemical Class	Strobilurin fungicide

From: Leung Cheng, Chemist
Registration Action Branch 3
Health Effects Division (7509C)

Through: Stephen Dapson, Branch Senior Scientist
Registration Action Branch 3
Health Effects Division (7509C)

To: John Bazuin/Cynthia Giles-Parker, Team 22
Fungicide Branch
Registration Division (7505C)

This document was originally prepared under contract by Dynamac Corporation (1910 Sedwick Rd., Bld. 100, Durham, NC 27713; submitted 8/31/05). The document has been reviewed by the HED and revised to reflect current OPP policies.

NOV 09 2005

1

Executive Summary

Pyraclostrobin belongs to the strobilurin class of fungicides that inhibit spore germination, mycelial growth, and sporulation of pathogenic fungi on leaf surfaces. Pyraclostrobin is registered to BASF Corporation and is formulated as water-dispersible granules (WDG) and an emulsifiable concentrate (EC) for use on numerous crops as foliar applications using ground or aerial equipment. Two WDG formulations are currently registered for up to five broadcast foliar applications to strawberries during fruit development at up to ~0.18 lb ai/A/application, at 7-day retreatment intervals (RTIs), for a maximum of ~0.94 lb ai/A/season. The label specified preharvest interval (PHI) for strawberry is 0 days.

Permanent tolerances for pyraclostrobin in plant commodities are listed in 40 CFR §180.582 (a)(1) in terms of the combined residues of the pyraclostrobin (carbamic acid, [2-[[[1-(4-chlorophenyl)-1H- pyrazol-3-yl]oxy]methyl]phenyl]methoxy-, methyl ester) and its desmethoxy metabolite (methyl 2-[[[1-(4-chlorophenyl)-1H-pyrazol-3-yl]oxy]methyl]phenyl carbamate), BF 500-3, expressed as parent compound. The established tolerances for plant commodities range from 0.02 ppm (wheat grain) to 27 ppm (grass seed screenings), and include a permanent tolerance of 0.4 ppm on strawberry.

Due to over-tolerance residues observed in strawberries from commercial production fields in California (CA), BASF is requesting an increase in the permanent tolerance on strawberry from 0.4 ppm to 1.5 ppm and has submitted supplemental strawberry field trial data from CA to support this increase. In the interim, the Agency has established a time-limited tolerance on strawberry at 1.5 ppm under §180.582(a)(3) that is set to expire on 12/31/05 .

HED has determined that the nature of the residue in plants and livestock is adequately understood. For purposes of both tolerance setting and risk assessment, the residues of concern in plant commodities consist of pyraclostrobin and metabolite BF 500-3, expressed as parent. The residues of concern in livestock commodities consist of pyraclostrobin and its metabolites convertible to 1-(4-chlorophenyl)-1H-pyrazol-3-ol (BF 500-5) and 1-(4-chloro-2-hydroxyphenyl)-1H-pyrazol-3-ol (BF 500-8), expressed as parent.

Adequate residue analytical methods are available for the enforcement of established tolerances. These methods have successfully passed independent laboratory validation and have been forwarded to ACB/BEAD for petition method validations. Residues in the current strawberry field trials were determined using an adequate LC/MS/MS method (BASF Method Number D9908), which is similar to the proposed enforcement method. The method was adequately validated in conjunction with the field trial analyses with an LOQ (limit of quantitation) of 0.02 ppm, and an estimated LOD (limit of detection) of 0.005 ppm for each analyte.

As there are no livestock feed items associated with strawberry, the proposed increase in the strawberry tolerance will not increase the maximum theoretical dietary burden of pyraclostroin to

livestock. Therefore, reassessment of tolerances for livestock commodities is not necessary for this petition.

The additional strawberry field trial data from CA are adequate and reflect the current use pattern for pyraclostrobin (WDG) on strawberry. Samples were analyzed using an adequate method, and the sample storage intervals are supported by the available storage stability data. In the new CA field trials conducted at a 1x rate, the combined pyraclostrobin residues were 0.37-0.85 ppm in/on 12 strawberry samples harvested at 0 days after the last application (DAT), and average residues were 0.607 ppm. In tests conducted at a 2x rate, combined residues at 0 DAT were 0.74-1.68 ppm in/on 12 samples and averaged 1.21 ppm. In addition to the data from these supervised field trials, BASF has reported residues in excess of 0.4 ppm in 23 strawberry samples harvested 2-6 days post-treatment from commercial production fields in CA that had been reportedly treated at 0.8x-1x rates. Pyraclostrobin residues in these samples were 0.46-1.20 ppm and averaged 0.707 ± 0.244 ppm. It should be pointed out that these commercial production fields are not equivalent to controlled field trials which must be conducted according to Good Laboratory Practices for the purpose of setting tolerance levels. The registrant previously also noted that all the residue data exceeding 0.4 ppm occurred in the coastal areas of CA. From the current study, there appears no significant difference in residue level whether the field trials were conducted in coastal (Monterey and Ventura) or inland (Tulare) area and the spray volume had minimal or no impact on residue levels.

Adequate confined and limited field rotational crop studies are available. Tolerances for rotated crops are not required and the available data support the current label-specified 14 day plant-back interval for crops not listed on the label.

Regulatory Recommendations and Residue Chemistry Deficiencies

There are no major residue chemistry deficiencies in this petition that would preclude increasing the current permanent tolerance for pyraclostrobin on strawberries. Based on the new field trial data from CA, HED recommends increasing the permanent tolerance on strawberry from 0.4 ppm to 1.2 ppm.

Background

Pyraclostrobin is a fungicide that is structurally related to the naturally occurring strobilurins, compounds derived from some fungal species. Pyraclostrobin is also in the same chemical class as azoxystrobin (PC 128810) and trifloxystrobin (PC 129112). The biochemical mode of action of these compounds is inhibition of electron transport in pathogenic fungi. Pyraclostrobin is currently registered for use on a number of crops, including strawberries. Permanent tolerances have been established [40 CFR §180.582(a)(1)] for residues of pyraclostrobin and its metabolite in/on a number of plant commodities, including residues in/on strawberries at 0.4 ppm.

Since the tolerance on strawberry was established, BASF has reported (MRID 46245101) that over-tolerance residues of pyraclostrobin (0.46-1.20 ppm) were observed in a number of samples from commercial strawberry fields following applications of pyraclostrobin (WDG) at the maximum labeled use rate. All the samples came from fields located in the coastal growing region of California during the 2003-2004 season. After meeting with the Agency (5/14/04), BASF indicated that they would request an increase in the current strawberry tolerance and provide additional supervised strawberry field trials from California.

BASF has subsequently submitted a petition (PP#4F6850) requesting an increase in the existing tolerance for pyraclostrobin on strawberry from 0.4 ppm to 1.5 ppm. While this petition request is under consideration, the Agency in the interim has established a time-limited tolerance on strawberry of 1.5 ppm (*69 FR 63083, 10/29/04,* expires on 12/31/05), based on a risk assessment assuming a tolerance of 1.5 ppm on strawberries. To support an increase in the tolerance, BASF has submitted interim and final reports (MRIDs 46330001 and 46588101) from three additional strawberry field trials conducted in CA. The nomenclature and physicochemical properties of pyraclostrobin are presented below in Tables 1 and 2.

Table 1. Nomenclature of Pyraclostrobin

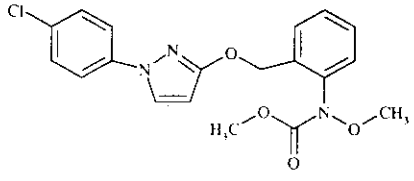
Compound	
Common name	Pyraclostrobin
Company experimental names	BAS 500 F
IUPAC name	Methyl *N*-{2-[1-(4-chlorophenyl)-1*H*-pyrazol-3-yloxymethyl]phenyl}(*N*-methoxy)carbamate
CAS name	Methyl [2-[[[1-(4-chlorophenyl)-1*H*-pyrazol-3-yl]oxy]methyl]phenyl]methoxycarbamate
CAS #	175013-18-0
End-use products/EPs	20% WDG (Cabrio® Fungicide; EPA Reg. No. 7969-187). 12.8% WDG (Pristine® Fungicide; EPA Reg. No. 7969-199; also contains 25.2% boscalid)

Table 2. Physicochemical Properties for Pyraclostrobin (BAS 500 F)		
Parameter	Value	Reference[1]
Melting point	63.7-65.2 °C	D269848 & D274191
Density	1.285g/cm^3 at 20°C	D269848 & D274191
Water solubility (20°C)	2.41 mg/L in deionized water at 20°C 1.9 mg/L in buffer system pH 7 at 20°C 2.3 mg/L in buffer system pH 4 at 20°C 1.9 mg/L in buffer system pH 9 at 20°C	D269848 & D274191
Solvent solubility (mg/L at 20°C)	acetone (≥160 mg/L); methanol (11 mg/L); 2-propanol (3.1 mg/L); ethyl acetate (>160 mg/L); acetonitrile (≥76 mg/L); dichloromethane (≥110 mg/L); toluene (≥100 mg/L); n-heptane (0.36 mg/L); 1-octanol (2.4 mg/L); olive oil (2.9 mg/L); DMF (≥62 mg/L).	D269848 & D274191
Vapor pressure at 25°C	2.6 x 10^{-10} hPa (at 20°C); 6.4 x 10^{-10} hPa	D269848 & D274191
Dissociation constant (pK_a)	Does not dissociate in water. There are no dissociable moieties.	D269848 & D274191
Octanol/water partition coefficient Log(K_{OW})	n-Octanol/water partition coefficient (K_{ow}) at room temperature (=K_{ow} of 3.80, pH 6.2; =log K_{ow} 4.18, pH 6.5).	D269848 & D274191

[1] Product Chemistry data were reviewed by the Registration Division (D269848 and D274191, 5/3/01, 5/15/01, and 6/7/01, S. Malak)

860.1200 Directions for Use

There are presently two end-use products containing pyraclostrobin that are registered to BASF for use on strawberries. One is a 20% WDG formulation (Cabrio® Fungicide; EPA Reg. No. 7969-199), and the other is a WDG that is a multiple active ingredient formulation containing 12.8% pyraclostrobin and 25.2% boscalid (Pristine® Fungicide; EPA Reg. No. 7969-199). BASF is not proposing any changes in the current use directions for strawberries (Table 3).

Table 3. Summary of Current Directions for Use of Pyraclostrobin.

Applic. Timing, Type, and Equip.	Formulation (EPA Reg. No.)	Application Rate (lb ai/A)		Max. No. Applic/ Season	RTI (days)[1]	PHI (days)[1]	Use Directions and Limitations[2]
		App.	Season				
Strawberry							
Broadcast foliar, ground or aerial equipment	20% WDG (7969-187)	0.175	0.88	5	7	0	Begin applications no later than bloom or prior to disease development and continue on a 7- or 14-day interval.
	12.8% WDG (7969-199)	0.184	0.92	5	7	0	

[1] RTI = minimum retreatment interval; PHI = minimum preharvest interval.

Plants listed on the label can be replanted immediately. Plant-back intervals have been established at 14 days for all other crops with the following exception: soybean, cowpeas, field peas, lupin, sugar beets, garden beets, turnips, and radishes are excluded and may not be replanted.

860.1300 Nature of the Residue - Plants

HED Metabolism Committee Decision Memo; D278044, L. Cheng, 10/9/01

Adequate metabolism studies with pyraclostrobin on grapes, potatoes, and wheat have been reviewed (D269668, L. Cheng, 11/28/01) in conjunction with PP#0F06139. The results of these studies indicate that the metabolism of pyraclostrobin is similar in the three crops investigated. The HED Metabolism Assessment Review Committee (MARC) concluded that the nature of the residue in plants is understood. For purposes of tolerance setting and risk assessment, the terminal residues of concern in plants consist of pyraclostrobin and its desmethoxy metabolite (BF 500-3).

860.1300 Nature of the Residue - Livestock

HED Metabolism Committee Decision Memo; D278044, L. Cheng, 10/9/01

Adequate metabolism studies with pyraclostrobin on ruminants and laying hens were reviewed (D269668, L. Cheng, 11/28/01) in conjunction with PP#0F06139. The HED MARC has determined that for purposes of tolerance setting and risk assessment, the residues of concern in livestock commodities consist of pyraclostrobin and its metabolites convertible to 1-(4-chlorophenyl)-1H-pyrazol-3-ol and 1-(4-chloro-2-hydroxyphenyl)-1H-pyrazol-3-ol.

860.1340 Residue Analytical Methods

In the previous petition, PP#0F06139, two tolerance enforcement methods were proposed for the determination of residues of pyraclostrobin and its desmethoxy metabolite (BF 500-3) in/on plant commodities: LC/MS/MS method D9808 (U.S.) or 421/0 (Germany), and HPLC/UV method D9904. Adequate independent method validation and radiovalidation data have been submitted for both methods, and both methods have been forwarded to ACB/BEAD for petition method validation (D269850, L. Cheng, 11/8/00).

Samples from the strawberry field trials submitted in conjunction with this petition were analyzed for residues of pyraclostrobin and its metabolite BF 500-3 using the LC/MS/MS method, BASF Method Number D9908. Method D9908 used an alternate extraction option: samples were extracted with methanol:water:2 N HCl (7:2.5:0.5; v:v:v) instead of methanol:water (7:3; v:v). The LOQ was 0.02 ppm for each analyte in plant matrices. The LOD was 0.005 ppm for each analyte.

Conclusion. Based on the submitted concurrent method validation data, the LC/MS/MS method, BASF Method Number D9908 is adequate for collecting data on residues of pyraclostrobin and BF 500-3 in/on strawberries.

860.1360 Multiresidue Methods

Data pertaining to the multiresidue methods testing of pyraclostrobin and its desmethoxy metabolite were reviewed (DP Barcode D269668, L. Cheng, 11/28/01) in conjunction with PP#0F06139. Pyraclostrobin was successfully evaluated through several of the FDA protocols, while recovery of BF 500-3 was unsuccessful in all protocols. Pyraclostrobin was completely recovered through Protocol D (in grape) and E (in grape), and partially recovered through Protocol F (in peanut). Metabolite BF 500-3 had poor peak shape and inadequate sensitivity with Protocol C columns and, therefore, was not further analyzed under Protocol D, E, and F. The results of the multiresidue testing for pyraclostrobin were forwarded to FDA.

860.1380 Storage Stability

Adequate storage stability studies are available indicating that pyraclostrobin and its metabolite BF 500-3 are relatively stable under frozen storage conditions in/on fortified samples of grape juice, sugar beet tops and roots, tomatoes, and wheat grain and straw for up to 25 months, and in/on fortified samples of peanut nutmeat and processed oil for up to 19 months (D269668, L. Cheng, 11/28/01). These data adequately support the storage intervals (up to 34 days) in the current strawberry studies.

860.1400 Water, Fish, and Irrigated Crops

This guideline requirement is not relevant to the current petition as there are no aquatic uses being proposed for pyraclostrobin.

860.1460 Food Handling

This guideline requirement is not relevant to the current petition as there are no food handling uses being proposed for pyraclostrobin.

860.1480 Meat, Milk, Poultry, and Eggs

No tolerances are established on poultry and eggs. The proposed increase in the tolerance for strawberries will not have an impact on the maximum theoretical dietary burden of pyraclostrobin to beef and dairy cattle which were estimated (D269668, L. Cheng, 11/28/01) to be 36.3 ppm and 35.4 ppm, respectively. Therefore, reassessment of tolerances on livestock commodities is not required for this petition.

860.1500 Crop Field Trials

D269668, L. Cheng, 11/28/01
46588101.der

To support the proposed tolerance increase on strawberry, BASF has submitted three additional strawberry field trials from CA. The results from the current field trials are summarized below in Table 4 and discussed along with the data from the original strawberry field trials submitted in conjunction with PP#0F06139.

Table 4. Summary of Residue Data for Pyraclostrobin (WDG) from Strawberry Field Trials.

Commodity	Formulation	Total Rate (lb a.i./A)	PHI (days) [1]	Combined Pyraclostrobin Residues (ppm) [2]						
				n	Min.	Max.	HAFT [3]	Median (STMdR[4])	Mean (STMR[4])	Std. Dev.
MRID 45118604 [5]										
Strawberry	20% WDG	0.88-0.92	0-1	16	0.07	0.39	0.330	0.175	0.188	0.081
MRID 46588101 [6]										
Strawberry	12.8% WDG [7]	0.93-0.95	0	12	0.37	0.85	0.785	0.615	0.607	0.163
		1.86-1.90	0	12	0.74	1.68	1.63	1.12	1.21	0.29

[1] The current PHI for strawberries is 0 days.
[2] The method LOQ is 0.02 ppm for pyraclostrobin and Metabolite BF 500-3, and the LOD is 0.005 ppm for each analyte. Combined residues were calculated by adding parent and BF 500-3 (expressed as parent equivalents) residues.
[3] HAFT = Highest Average Field Trial.
[4] STMdR = Supervised Trial Median Residue; STMR = Supervised Trial Mean Residue.
[5] *Reviewed in conjunction with PP#0F6139, DP Barcode D269668, L. Cheng, 11/28/01.*
[6] The newer field trials conducted in CA included applications at 1x and 2x the maximum rate.
[7] This EP contains 12.8% pyraclostrobin and 25.2% boscalid.

MRID 45118604. A total of eight strawberry field trials were originally conducted during 1999 in CA (3 tests), FL (1 test), MI (1 test), NC (1 test), OR (1 test), and PA (1 test). At each site, pyraclostrobin (20% WDG) was applied to strawberries during fruit development as five broadcast foliar applications at 0.17-0.19 lb ai/A/application, at 6- to 8-day retreatment intervals, for a total of 0.88-0.92 lb ai/A/season (1x rate). Applications were made in 25-100 gal/A using ground equipment with a spreader-sticker added to the spray mixture. Samples of strawberries were harvested immediately (0-day PHI) or one day (OR trial only) following the last application. In the CA trial, additional strawberry samples were collected at 7, 14, 21, and 28 DAT to evaluate residue decline.

All samples were analyzed for residues of pyraclostrobin and BF 500-3 using Method D9908. Apparent residues of pyraclostrobin and BF 500-3 were each less than the LOQ (<0.02 ppm) in/on eight samples of untreated strawberries.

Residues of pyraclostrobin were 0.05-0.37 ppm and residues of BF 500-3 were <0.02 ppm in/on 16 strawberry samples harvested 0-1 days following the final application. Combined residues

As specified in OPPTS 860.1000 (Table 1), there are no processed foods associated with uses on strawberries, thus, this guideline requirement is not relevant to the current petition.

860.1650 Submittal of Analytical Reference Standards

As of 9/2004, the analytical reference standards for pyraclostrobin are available at the EPA National Pesticide Standards Repository.

860.1850 Confined Accumulation in Rotational Crops

The Agency previously concluded (D269668, L. Cheng, 11/28/01) that adequate confined rotational crop studies with pyraclostrobin are available pending submission of additional storage stability data and information. The requested stability data and information have been reviewed and deemed adequate (D314519, 5/5/2005, L. Cheng). The reviewed studies indicate that the metabolism of pyraclostrobin in rotated crops is similar but more extensive than that in primary crops, with pyraclostrobin undergoing demethoxylation to yield 500M07 (BF 500-3), followed by further degradation to medium polar and polar metabolites, and subsequent conjugation reactions and incorporation into natural products. The MARC (9/20/01) concluded that the residues of concern in rotational crops consist of pyraclostrobin and its desmethoxy metabolite.

860.1900 Field Accumulation in Rotational Crops

The available data from a limited field rotational crop study, reviewed in PP#0F06139 (D269668, L. Cheng, 11/28/01), indicate that the 14-day plant-back restriction is acceptable for all crops that are not registered for direct application.

860.1550 Proposed Tolerances

Tolerances for plant commodities are listed in 40 CFR §180.582 (a)(1) in terms of the combined residues of pyraclostrobin and its desmethoxy metabolite (BF 500-3), expressed as parent compound. The established tolerances for plant commodities range from 0.02 ppm (wheat grain) to 27 ppm (grass seed screenings), and included a tolerance of 0.4 ppm in/on strawberries.

In the current petition, BASF is requesting an increase in the existing permanent tolerance on strawberry from 0.4 ppm to 1.5 ppm. While this petition request is under consideration, the Agency in the interim has established a time-limited tolerance on strawberry of 1.5 ppm (*69 FR 63083, 10/29/04*), which is set to expire on 12/31/05.

In the current three CA field trials, the maximum combined residues of pyraclostrobin and metabolite BF 500-3 in/on strawberry was 0.85 ppm and would support increasing the current tolerance of 0.4 ppm. Following the *2005 Guidance for Setting Pesticide Tolerances Based on Field Trial Data* SOP, the residue data for strawberry support a tolerance of 1.2 ppm. Therefore,

were 0.07-0.39 ppm and averaged 0.188 ppm. In the residue decline trial, average pyraclostrobin residues declined steadily from 0.31 ppm at 0 DAT to 0.03 ppm by 28 DAT.

MRID 46588101. In the three strawberry field trials conducted in CA during 2004 and 2005, a WDG formulation containing both pyraclostrobin (12.8%) and boscalid (25.2%) was applied to strawberries as five broadcast foliar applications during fruit development at RTIs of 6-8 days. Four separate treatments were conducted at each field site, applying the WDG formulation at either a 1x or 2x rate and as either dilute or concentrate sprays. Based on the amount of product applied, the single application rates for pyraclostrobin were 0.182-0.195 lb ai/A, for 0.93-0.95 lb ai/A/season (1x rate), or 0.36-0.39 lb ai/A, for 1.86-1.90 lb/A/season (2x rate). Applications were made with ground equipment using dilute (~150 gal/A) or concentrate (~30 gal/A) sprays. A single control and duplicate treated samples of strawberries were collected from each test plot at commercial maturity, the same day as the last treatment (0-DAT). Samples were stored frozen from collection to analysis for 12-34 days, an interval supported by available storage stability data.

The LC/MS/MS method (BASF Method Number D9908) used to determine residues of pyraclostrobin and its metabolite, BF 500-3, in/on strawberry fruit is adequate for data collection. For this method, residues are extracted with methanol:water:2 N HCl, concentrated, cleaned up by solvent partitioning and analyzed by LC/MS/MS. The LOQ is 0.02 ppm for pyraclostrobin and Metabolite BF 500-3.

The application volume had minimal or no impact on residue levels; therefore, the data from dilute and concentrate sprays were pooled. For the 1x application rate, residues in/on 12 samples of strawberry from the 0-day PHI were 0.35-0.81 ppm for pyraclostrobin and 0.012-0.043 ppm for BF 500-3, for combined residues of 0.37-0.85 ppm. Average residues were 0.575 ppm for pyraclostrobin, 0.030 ppm for Metabolite BF 500-3, and 0.607 ppm for the combined pyraclostrobin residues.

For the 2x application, residues in/on 12 samples of strawberry from the 0-day PHI were 0.81-1.60 ppm for pyraclostrobin and 0.037-0.083 ppm for BF 500-3, for combined pyraclostrobin residues of 0.74-1.68 ppm. Average residues were 1.16 ppm for pyraclostrobin, 0.056 ppm for Metabolite BF 500-3, and 1.21 ppm for the combined residues.

Conclusions. The new supplemental strawberry field trial data from CA are adequate. The current CA field trials reflect the use of up to five foliar applications of a WDG formulation containing pyraclostrobin at 1x the maximum labeled rate and support a 0-day PHI. Maximum combined pyraclostrobin residues from the 1x application in CA were 0.85 ppm and would support the increased tolerance. From the current study there appears no significant difference in residue level whether the field trials were located in coastal (Monterey and Ventura) or inland (Tulare) area and the spray volume had minimal or no impact on residue levels.

860.1520 Processed Food and Feed

Residue values (parent + metabolite) on strawberry
MRID 46588101

0.590
0.730
0.740
0.830
0.370
0.460
0.400
0.510
0.470
0.640
0.720
0.850

INTERNATIONAL RESIDUE LIMIT STATUS

Chemical Name: carbamic acid, [2-{[[1-(4-chlorophenyl) -1H-pyrazol-3-yl] oxy]methyl]phenyl] methoxy-, methyl ester	Common Name: Pyraclostrobin (BAS 500 F)	X Proposed tolerance ☐ Reevaluated tolerance ☐ Other	Date:

Codex Status (Maximum Residue Limits)	U. S. Tolerances
X No Codex proposal step 6 or above ☐ No Codex proposal step 6 or above for the crops requested	Petition Numbers: PP#4F6850 DP Barcodes: D319564, D305177, D305178, D308576 Other Identifier:
Residue definition (step 8/CXL): pyraclostrobin (fat soluble)	Reviewer/Branch: Leung Cheng, RAB3
	Residue definition: Pyraclostrobin and its desmethoxy metabolite methyl 2-[[[1-(4-chlorophenyl)pyrazol-3-yl]oxy]methyl]phenyl carbamate, expressed as parent.

Crop (s)	MRL (mg/kg)	Crop(s)	Tolerance (ppm)
Strawberry	0.5	Strawberry	1.5

Limits for Canada	Limits for Mexico
X No Limits (but see below) X No Limits for the crops requested	X No Limits ☐ No Limits for the crops requested
Residue definition: No MRLs, but registered for use on strawberries (Cabrio EG Fungicide, 20%)	Residue definition:

Crop(s)	MRL (mg/kg)	Crop(s)	MRL (mg/kg)

Notes/Special Instructions:
S.Funk, 09/06/2005.

Rev. 1998

To: F. D. Griffith, Jr.
Dated: 11/8/00
MRIDs: 45118505, 45118504, 45118509, 45118510, 45118501, 45118503, 45118507, 45118514

RD/I:ChemTeam:10/27/2005:SDapson:10/31/2005

Attachments:
DER for MRID 46588101

Template Version November 2003

the Agency recommends increasing the current permanent tolerance for strawberry from 0.4 ppm to 1.2 ppm (Table 5).

Table 5. Tolerance Summary for Pyraclostrobin

Commodity	Proposed Tolerance (ppm)	Recommended Tolerance (ppm)	Comments (*Correct commodity definition*)
Strawberry	1.5	1.2	The available residue data are adequate.

No Canadian or Mexican maximum residue limits (MRLs) are established for residues of pyraclostrobin in/on strawberry (see attached International Residue Limit Status sheet). There is a Codex MRL established at 0.5 ppm for strawberry (step 8/CXL). The US tolerance level and residue definition both differ from Codex.

References

DP Barcode: D278044
Subject: PP# 0F06139. Pyraclostrobin. Outcome of the HED Metabolism Assessment Review Committee (MARC) Meeting Held on September 20, 2001.
From: L. Cheng
To: Y. Donovan
Dated: 10/9/01
MRIDs: None

DP Barcodes: D269668, D272771, D272789, D274095, D274192, D274471, D274957, D275843, and D278429
Subject: PP#0F06139. PC Code 099100. Pyraclostrobin on Various Crops: Bananas (import), Barley, Berries, Bulb Vegetables, Citrus Fruits, Cucurbit Vegetables, Dried Shelled Pea & Bean (except Soybean), Fruiting Vegetables, Grapes, Grass, Peanut, Pistachio, Root Vegetables (except Sugar Beet), Rye, Snap Beans, Stone Fruits, Strawberry, Sugar Beet, Tree Nuts, Tuberous and Corm Vegetables, and Wheat. Review of Analytical Methods and Residue Data. EPA File Symbols: 7969-RIT, 7969-RIA. CAS #175013-18-0.
From: L. Cheng
To: C. Giles-Parker/J. Bazuin
Dated: 11/28/01
MRIDs: 45118428-451184-37, 45118501-45118512, 45118514-45118537, 45118601-45118625, 45160501, 45272801, 45274901, 45321101, 45367501, 45399401, and 45429901

DP Barcode: D269850
Subject: PP# 0F06139. Pyraclostrobin (BAS 500F) in or on Various Crops. Request for Tolerance Method Validation (TMV) Trial.
From: L. Cheng

Primary Evaluator Leung Cheng, Chemist Date: 11/2/2005
RAB3/HED

Approved by Stephen Dapson, BSS Date: 11/2/2005
RAB3/HED

In the absence of signatures, this document is considered to be a draft with deliberative material for internal use only.

This DER was originally prepared under contract by Dynamac Corporation (1910 Sedwick Rd., Building 100, Suite B; Durham, NC 27713; submitted 8/31/2005). The DER has been reviewed by the HED and revised to reflect current OPP policies.

STUDY REPORT:

46588101 Jordan, J.; Jones, J. (2004) Magnitude of Pyraclostrobin (BAS 500 F) and Boscalid (BAS 510 F) Residues in Strawberries After Treatment with Pristine® (BAS 516 04 F). Lab Project Number: 2005/5000095: 202513. Unpublished study prepared by BASF Corporation. 126 p.

EXECUTIVE SUMMARY:

In three strawberry field trials conducted in CA during 2004 and 2005, a WDG formulation containing both pyraclostrobin (12.8%) and boscalid (25.2%) was applied to strawberries as five broadcast foliar applications during fruit development at retreatment intervals (RTIs) of ~7 days. Four separate treatments were conducted at each field site, applying the WDG formulation at either a 1x or 2x rate and as either dilute or concentrate sprays. Based on the amount of product applied, the single application rates for pyraclostrobin were 0.182-0.195 lb ai/A, for 0.93-0.95 lb ai/A/season (1x rate), or 0.36-0.39 lb ai/A, for 1.86-1.90 lb/A/season (2x rate). Applications were made with ground equipment using dilute (~150 gal/A) or concentrate (~30 gal/A) sprays. A single control and duplicate treated samples of strawberries were collected from each test plot at commercial maturity, the same day as the last treatment (0-DAT). Samples were stored frozen from collection to analysis for 12-34 days, an interval supported by available storage stability data.

The LC/MS/MS method (BASF Method Number D9908) used to determine residues of pyraclostrobin and its metabolite, BF 500-3, (and boscalid,) in/on strawberry fruit is adequate for data collection. For this method, residues are extracted with methanol:water:2 N HCl, concentrated, cleaned up by solvent partitioning and analyzed by LC/MS/MS. The LOQ is 0.02 ppm for pyraclostrobin and metabolite BF 500-3 in/on strawberries; the LOD was 0.005 ppm for each analyte.

For the 1x application rate, residues in/on 12 samples of strawberry from the 0-day PHI were 0.35-0.81 ppm for pyraclostrobin and 0.012-0.043 ppm for BF 500-3, for combined residues of

0.37-0.85 ppm. Average residues were 0.575 ppm for pyraclostrobin, 0.030 ppm for metabolite BF 500-3, and 0.607 ppm for the combined pyraclostrobin residues.

For the 2x application, residues in/on 12 samples of strawberry from the 0-day PHI were 0.81-1.60 ppm for pyraclostrobin and 0.037-0.083 ppm for BF 500-3, for combined pyraclostrobin residues of 0.74-1.68 ppm. Average residues were 1.16 ppm for pyraclostrobin, 0.056 ppm for metabolite BF 500-3, and 1.21 ppm for the combined residues.

The application volume had minimal or no impact on residue levels; therefore, the data from dilute and concentrate sprays were pooled. Also, there appears no significant difference in residue level whether the field trials were conducted in coastal (Monterey and Ventura) or inland (Tulare) area.

STUDY/WAIVER ACCEPTABILITY/DEFICIENCIES/CLARIFICATIONS:

Under the conditions and parameters used in the study, the supplemental strawberry field trial residue data are classified as scientifically acceptable. The acceptability of this study for regulatory purposes is addressed in the forthcoming U.S. EPA Residue Chemistry Summary Document DP Barcode D319564.

COMPLIANCE:

Signed and dated GLP, quality assurance, and data confidentiality statements were provided. No deviations from regulatory requirements were noted that would impact the study results or their interpretation.

A. BACKGROUND INFORMATION

Pyraclostrobin is a fungicide that is structurally related to naturally occurring strobilurins, compounds derived from some fungal species. The biochemical mode of action of these compounds is inhibition of electron transport in pathogenic fungi. Pyraclostrobin is currently registered for use on a number of commodities, including strawberries. Permanent tolerances have been established for residues of pyraclostrobin in/on numerous plant commodities, including strawberries at 0.4 ppm [40 CFR §180.582(a)]. The current field trials were submitted by BASF to support a request to increase the pyraclostrobin tolerance in/on strawberry to 1.5 ppm (PP#4F6850).

The nomenclature and physicochemical properties of pyraclostrobin are presented below in Table A.1.1 and A.2.1.

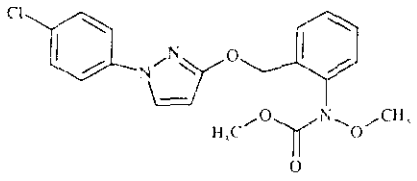
TABLE A.1.1. Nomenclature of Pyraclostrobin	
Compound	
Common name	Pyraclostrobin
Company experimental names	BAS 500 F
IUPAC name	Methyl *N*-{2-[1-(4-chlorophenyl)-1*H*-pyrazol-3-yloxymethyl]phenyl}(*N*-methoxy)carbamate
CAS name	Methyl [2-[[[1-(4-chlorophenyl)-1*H*-pyrazol-3-yl]oxy]methyl]phenyl]methoxycarbamate
CAS #	175013-18-0
End-use product/EP	MAI (multiple active ingredient) water dispersible granular formulation (WDG) containing 12.8% pyraclostrobin and 25.2 %boscalid. (Pristine® Fungicide; EPA Reg. No. 7969-199).

TABLE A.2.1. Physicochemical Properties for Pyraclostrobin (BAS 500 F)		
Parameter	Value	Reference[1]
Melting point	63.7-65.2 °C	D269848 & D274191
Density	1.285g/cm^3 at 20°C	D269848 & D274191
Water solubility (20°C)	2.41 mg/L in deionized water at 20°C 1.9 mg/L in buffer system pH 7 at 20°C 2.3 mg/L in buffer system pH 4 at 20°C 1.9 mg/L in buffer system pH 9 at 20°C	D269848 & D274191
Solvent solubility (mg/L at 20°C)	acetone (≥160 mg/L); methanol (11 mg/L); 2-propanol (3.1 mg/L); ethyl acetate (≥160 mg/L); acetonitrile (≥76 mg/L); dichloromethane (≥110 mg/L); toluene (≥100 mg/L); n-heptane (0.36 mg/L); 1-octanol (2.4 mg/L); olive oil (2.9 mg/L); DMF (≥62 mg/L).	D269848 & D274191
Vapor pressure at 25°C	2.6 x 10^{-10} hPa (at 20°C); 6.4 x 10^{-10} hPa	D269848 & D274191
Dissociation constant (pK_a)	Does not dissociate in water. There are no dissociable moieties.	D269848 & D274191
Octanol/water partition coefficient Log(K_{OW})	n-Octanol/water partition coefficient (K_{ow}) at room temperature (=K_{ow} of 3.80, pH 6.2; =log K_{ow} 4.18, pH 6.5).	D269848 & D274191

[1] Product Chemistry data were reviewed by the Registration Division (D269848 and D274191, 5/3/01, 5/15/01, and 6/7/01, S. Malak)

B. EXPERIMENTAL DESIGN

B.1. Study Site Information

Weather conditions were reported to be normal (Table B.1.1); no further details were provided. No unusual conditions that would affect the integrity of the study were reported. Rainfall was supplemented with irrigation as needed. Five plots were established at each test site, including a

control plot, and four treated plots using either a 1x or 2x application rate with dilute or concentrate spray volumes (Table B.1.2).

TABLE B.1.1 Trial Site Conditions.

Trial Identification (City, State, Year)	Soil characteristics				Meteorological data[1]	
	Type	%OM	pH	CEC	Overall total monthly rainfall range (inches)	Overall average monthly temperature range (°C)
Monterey, CA, 2004	Loam	NA = Not Applicable			Normal (0.00-0.08)	Normal (47.7-66.8)
Ventura Co, CA, 2004	Loam	NA			Normal (0.00-0.01)	Normal (49.4-76.4)
Tulare, CA, 2005	loam	NA			Normal (1.58-2.11)	Normal (42.28-79.58)

[1] Detailed meteorological data were not provided.

TABLE B.1.2. Study Use Pattern on Strawberry.

Location (City, State) Year	Application of MAI Formulation containing Pyraclostrobin (PY) and Boscalid (B)[1]							
	EP[1]	Method[2]; Timing	Volume[3] (gal/A)	Single Rate (lb ai/A)[4]	No. of Appl.	RTI (days)	Total Rate (lb ai/A)[4]	Tank Mix Adjuvants[5]
Monterey, CA, 2004	12.8% WDG	Broadcast foliar; beginning 28 days prior to normal harvest	30-32	0.18-0.20	5	7	0.95	Bond®
			149-158	0.18-0.20	5	7	0.94	Bond®
			30-32	0.37-0.39	5	7	1.90	Bond®
			148-154	0.36-0.38	5	7	1.86	Bond®
Ventura Co, CA, 2004	12.8% WDG	Broadcast foliar; beginning 28 days prior to normal harvest	30-31	0.18-0.19	5	6-8	0.93	Bond®
			149-159	0.18-0.19	5	6-8	0.94	Bond®
			30-32	0.36-0.38	5	6-8	1.87	Bond®
			149-157	0.37-0.38	5	6-8	1.87	Bond®
Tulare, CA 2005	12.8% WDG	Broadcast foliar; beginning 28 days prior to normal harvest	32	0.19	5	6-8	0.94	Bond®
			151-154	0.19	5	6-8	0.95	Bond®
			32	0.37-0.38	5	6-8	1.89	Bond®
			151-156	0.37-0.39	5	6-8	1.87	Bond®

[1] EP = End-use Product. The EP is a WDG containing 12.8% pyraclostrobin and 25.2% boscalid.
[2] The applications were made using ground equipment.
[3] Sprays were applied as either a dilute or concentrate spray.
[4] The 1x target application rate for the MAI formulation is 1.44 lb product/A/application and 7.2 lb product/A/season. This rate is equivalent to 0.184 lb ai/A/application of pyraclostrobin for 0.92 lb ai/A/season.
[5] Bond®, a commercial non-silicone based adjuvant, was applied according to the label on the adjuvant.

TABLE B.1.3. Trial Numbers and Geographical Locations.

NAFTA Growing Region [1]	Strawberry		
	Submitted	Requested	
		Canada	US
1	--	NA [2]	--
2	--	NA	--
3	--	NA	--
4	--	NA	--
5	--	NA	--
6	--	NA	--
7	--	NA	--
8	--	NA	--
9	--	NA	--
10	3	NA	3 [3]
11	--	NA	--
12	--	NA	--
13	--	NA	--
Total	3	NA	3

[1] Regions 14-21 and 1A, 5A, 5B, and 7A were not included as the proposed use is for the US only.
[2] NA = not applicable.
[3] As over tolerance residues were observed only in CA, only supplemental residue data from CA are required.

B.2. Sample Handling and Preparation

Strawberries were harvested at commercial maturity, the same day as the last application (0-DAT). A single control and duplicate treated strawberry samples (≥2 lbs each) were collected from each test and immediately placed in coolers with dry ice, then placed in frozen storage at the test facility within 8.5 hours. Samples were stored frozen for 3-5 days, then shipped by FedEx to the analytical laboratory, BASF Agro Research, RTP, NC, and stored frozen (<-10° C) prior to analysis. Samples were stored frozen from collection to analysis for up to 34 days.

B.3. Analytical Methodology

Residues of pyraclostrobin and its metabolite BF 500-3 were determined using a single LC/MS/MS method (BASF Method Number D9908), which is similar to the proposed enforcement method (BASF Method Number D9808). Methods D9808 and D9908 were validated in conjunction with a previous pyraclostrobin petition (DP Barcodes D269668, L. Cheng, 11/28/01) and deemed acceptable for data collection. A brief description of Method D9908 follows.

Residues are extracted with methanol:water:2 N HCl (70:25:5, v/v/v), concentrated, and cleaned up by partitioning into cyclohexane. Residues are then concentrated, redissolved in a methanol:buffer solution (99.9% 4 mM ammonium formate in water and 0.1% formic acid)

(80:20, v/v) and analyzed by LC/MS/MS, using external standards. For quantitation, the product/daughter ion for the transition *m/z* 388 → 194 for pyraclostrobin and *m/z* 358 → 164 for BAS 500-3 are measured. The LOQ is 0.02 ppm for pyraclostrobin and the metabolite BF 500-3 in/on strawberries; the LOD was 0.005 ppm for each analyte.

In conjunction with the current field trials, duplicate control samples of strawberries were fortified with pyraclostrobin and BF 500-3 at 0.02 and 2.0 ppm. The samples were analyzed concurrently with the field samples.

C. RESULTS AND DISCUSSION

The number and geographic representation of the strawberry field trials are adequate. These supplemental strawberry field trials were conducted in response to over-tolerance residues observed in CA. As over- tolerance residues were only associated with CA, the three field trials conducted in CA are sufficient to reassess the higher tolerance on strawberries.

In three strawberry field trials conducted during 2004 and 2005, a WDG formulation containing both pyraclostrobin (12.8%) and boscalid (25.2%) was applied as five broadcast foliar applications to strawberries during fruit development at RTIs of 6-8 days. Based on the amount of product applied, the single application rates for pyraclostrobin were 0.182-0.195 lb ai/A/application, for a total of 0.93-0.95 lb ai/A/season (1x rate), or 0.36-0.39 lb ai/A/application for a total of 1.86-1.89 lb/A/season (2x rate). Applications were made with ground equipment using dilute (~150 gal/A) or concentrate (~30 gal/A) sprays. A single control and duplicate treated samples of strawberries were collected from each test at commercial maturity, on the day of the final application (0-DAT).

The LC/MS/MS method (BASF Method Number D9908) used to determine residues of pyraclostrobin and metabolite BF 500-3 in/on strawberry fruit is adequate for data collection. Average concurrent recoveries were 100 ± 11% for pyraclostrobin and 90 ± 10% for BF 500-3 (Table C.1). Apparent residues of pyraclostrobin and BF 500-3 were <LOD in/on all control samples. The LOQ is 0.02 ppm for pyraclostrobin and metabolite BF 500-3 in/on strawberries; the LOD was 0.005 ppm for each analyte. Adequate sample calculations and chromatograms were provided.

Samples were stored frozen from collection to analysis for ≤34 days (Table C.2). Storage stability data are available on representative plant commodities indicating that pyraclostrobin and BF500-3 are stable in frozen storage for at least 25 months (D269668, L. Cheng, 11/28/01). These data will support the current strawberry field trials.

TABLE C.1	**Summary of Concurrent Recoveries of Pyraclostrobin and Metabolite BF 500-3 from Strawberries using LC/MS/MS Method D9908.**				
Analyte	Strawberry Matrix	Spiking Level (mg/kg)	Sample size	Recoveries (%)	Mean Recovery ± SD (%)

Pyraclostrobin (BAS 500 F	Fruit	0.02	4	100, 105, 95, 110	100 ± 11
		2.0	4	94, 117, 79, 103	
BF 500-3	Fruit	0.02	4	80, 87, 89, 103	90 ± 10
		2.0	4	80, 89, 88, 106	

TABLE C.2 Summary of Freezer Storage Conditions

Strawberry Matrix	Storage Temp. (°C)	Actual Storage Duration (days)[1]	Limit of Demonstrated Storage Stability (months)[2]	
			Pyraclostrobin	BF 500-3
Fruit	< -10	12-34	25	25

[1] Extracts were stored frozen for 0-1 days prior to analysis.
[2] Storage stability data are available indicating that pyraclostrobin and BF500-3 are stable in frozen representative plant matrices for at least 25 months (D269668, L. Cheng, 11/28/01).

Residue levels from the dilute vs. concentrate sprays were similar; therefore, residues from the two different spray volume treatments are combined in the following discussion. Also, there appears no significant difference in residue level whether the field trials were located in coastal (Monterey and Ventura) or inland (Tulare) area. For the 1x application, residues in/on 12 samples of strawberry from the 0-day PHI were 0.35-0.81 ppm for pyraclostrobin and 0.012-0.043 ppm for BF 500-3, for combined residues of 0.37-0.85 ppm (Table C.3.1). Average residues were 0.575 ppm for pyraclostrobin, 0.030 ppm for metabolite BF 500-3, and 0.607 ppm for the combined residues (Table C.4).

For the 2x application, residues in/on 12 samples of strawberry from the 0-day PHI were 0.81-1.60 ppm for pyraclostrobin and 0.037-0.083 ppm for BF 500-3, for combined residues of 0.74-1.68 ppm. Average residues were 1.16 ppm for pyraclostrobin, 0.056 ppm for Metabolite BF 500-3, and 1.21 ppm for the combined residues.

The cultural practices used to maintain plants, the weather conditions, and the maintenance chemicals and fertilizer used in the study were typical for the growing region (CA) and did not have a notable impact on the residue data. In addition, the application volume has minimal or no impact on residue levels.

TABLE C.3.1 Residue Data from Strawberry Field Trials with MAI Formulation Containing Pyraclostrobin at 12.8%.[1]

Trial ID (City, State, Year)	EPA Region	Strawberry Variety	Matrix	Spray Volume (gal/A)	Total Rate (lb ai/A)	PHI (days)[2]	Residues (ppm)[3]		
							Pyraclostrobin	BF 500-3[4]	Combined[4]
Monterey, CA, 2004	10	Diamante	Berry	~30	0.95	0	0.552, 0.694	0.034, 0.039	0.59, 0.73
				~150	0.94	0	0.699, 0.767	0.043, 0.033	0.74, 0.80
				~30	1.90	0	1.070, 1.390	0.058, 0.083	1.13, 1.47
				~150	1.86	0	1.490, 1.600	0.079, 0.078	1.57, 1.68
Ventura Co, CA, 2004	10	Camarosa	Berry	~30	0.93	0	0.351, 0.443	(0.012), (0.018)[5]	0.37, 0.46
				~150	0.94	0	0.375, 0.479	0.021, 0.026	0.40, 0.51

TABLE C.3.1 Residue Data from Strawberry Field Trials with MAI Formulation Containing Pyraclostrobin at 12.8%.[1]

Trial ID (City, State, Year)	EPA Region	Strawberry Variety	Matrix	Spray Volume (gal/A)	Total Rate (lb ai/A)	PHI (days)[2]	Residues (ppm)[3]		
							Pyraclostrobin	BF 500-3[4]	Combined[4]
				~30	1.87	0	1.010, 0.895	0.042, 0.037	1.05, 0.93
				~150	1.87	0	0.948, 0.806	0.043, 0.038	0.99, 0.74
Tulare, CA, 2005	10	Chandler	Berry	~30	0.94	0	0.436, 0.604	0.031, 0.034	0.47, 0.64
				~150	0.95	0	0.690, 0.808	0.030, 0.043	0.72, 0.85
				~30	1.89	0	1.064, 0.958	0.049, 0.044	1.11, 1.00
				~150	1.87	0	1.318, 1.360	0.062, 0.059	1.38, 1.42

[1] The EP contains 12.8% pyraclostrobin and 25.2% boscalid.
[2] The current PHI for strawberries is 0 days.
[3] The LOQ is 0.02 ppm for each analyte in/on strawberry fruit; the LOD was 0.005 ppm.
[4] BF 500-3 residues were expressed as parent equivalents (conversion factor = 1.0839). Combined residues were calculated by adding parent and BF 500-3 residues.
[5] Residues in parentheses were <LOQ and >LOD.

TABLE C.4. Summary of Residue Data for Strawberries from a Crop Field Trial using a Dual Active Ingredient Formulation (WDG) Containing 12.8% Pyraclostrobin and 25.2% Boscalid.

Commodity	Formulation[1]	Total Rate (lb a.i./A)	PHI (days)[2]	Residue	Residue Levels (ppm)[3]						
					n	Min.	Max.	HAFT[4]	Median (STMdR[5])	Mean (STMR[5])	Std. Dev.
Pyraclostrobin Residues[6]											
Fruit	12.8% WDG	0.93-0.95	0	Parent	12	0.351	0.808	0.749	0.578	0.575	0.157
			0	Metabolite	12	0.012	0.043	0.038	0.032	0.030	0.010
			0	Combined	12	0.37	0.85	0.785	0.615	0.607	0.163
		1.86-1.90	0	Parent	12	0.81	1.60	1.55	1.07	1.16	0.26
			0	Metabolite	12	0.037	0.083	0.079	0.054	0.056	0.017
			0	Combined	12	0.74	1.68	1.63	1.12	1.21	0.29

[1] The EP contains 12.8% pyraclostrobin and 25.2% boscalid.
[2] The current PHI for strawberries is 0 days.
[3] For pyraclostrobin and BF 500-3, the LOQ is 0.02 ppm for each analyte in/on strawberry fruit. The LOD was 0.005 ppm for each analyte.
[4] HAFT = Highest Average Field Trial.
[5] STMdR = Supervised Trial Median Residue; STMR = Supervised Trial Mean Residue.
[6] Combined residues were calculated by adding parent and BF 500-3 (expressed as parent equivalents) residues.

D. CONCLUSION

The strawberry field trials are adequate. The current field trials reflect the use in CA (Region 10) of up to five foliar applications of a WDG formulation containing pyraclostrobin and boscalid at the maximum seasonal rate of ~0.94 lb ai/A for pyraclostrobin, which is 1x the current maximum label rate. Data are also available supporting a 2x application, for which the maximum seasonal rate is ~1.88 lb ai/A for pyraclostrobin.

At the 1x rate, maximum combined pyraclostrobin residues were 0.85 ppm at a 0-day PHI. At the 2x rate, maximum combined pyraclostrobin residues were 1.68 ppm at a 0-day PHI.

From the current study, there appears no significant difference in residue level whether the field trials were conducted in coastal (Monterey and Ventura) or inland (Tulare) area.

E. REFERENCES

DP Barcodes: D269668, D272771, D272789, D274095, D274192, D274471, D274957, D275843, and D278429
Subject: PP#0F06139. PC Code 099100. Pyraclostrobin on Various Crops: Bananas (import), Barley, Berries, Bulb Vegetables, Citrus Fruits, Cucurbit Vegetables, Dried Shelled Pea & Bean (except Soybean), Fruiting Vegetables, Grapes, Grass, Peanut, Pistachio, Root Vegetables (except Sugar Beet), Rye, Snap Beans, Stone Fruits, Strawberry, Sugar Beet, Tree Nuts, Tuberous and Corm Vegetables, and Wheat. Review of Analytical Methods and Residue Data. EPA File Symbols: 7969-RIT, 7969-RIA. CAS #175013-18-0.
From: L. Cheng
To: C. Giles-Parker/J. Bazuin
Dated: 11/28/01
MRIDs: 45118428-451184-37, 45118501-45118512, 45118514-45118537, 45118601-45118625, 45160501, 45272801, 45274901, 45321101, 45367501, 45399401, and 45429901

F. DOCUMENT TRACKING

RD/I: ChemTeam:10/27/2005:SDapson:10/31/2005
Petition Number: 4F6850
DP Barcodes: 305177, 305178, 308576, 319564
PC Code: 099100

Template Version September 2003